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(a) For an active pay of twelve hundred dollars or less, a retiring allowance of eight hundred dollars, provided that no retiring allowance shall exceed eighty per cent. of the active pay.

(b) For an active pay greater than twelve hundred dollars, the retiring allowance shall equal eight hundred dollars, increased by forty dollars for each one hundred dollars in excess of twelve hundred dollars.

(c) For each additional year of service above twenty-five for a professor, or above thirty for an instructor, the retiring allowance shall be increased by one per cent. of the active pay.

(d) No retiring allowance shall exceed four thousand dollars.

Computed by the formula: $R = A/100(b + 15) + 320$, where R = retiring allowance, A = active pay and b = number of years of service.

RULE III

A widow who has been for ten years the wife of a teacher, who at the time of his death was in receipt of a retiring allowance, or who at the time of his death was eligible to a retiring allowance, or who had had twenty-five years of service as a professor or thirty years of service as an instructor and professor, shall receive as a pension one half of the retiring allowance to which her husband was entitled under rule I. or would have been entitled under rule II. in case of disability.

RULE IV

In the preceding rules, years of leave of absence are to be counted as years of service, but not exceeding one year in seven. Librarians, registrars, recorders and administrative officers of long tenure whose salaries may be classed with those of professors and assistant professors, are considered eligible to the benefits of a retiring allowance.

RULE V

Teachers in the professional departments of universities whose principal work is outside the profession of teaching are not included.

RULE VI

The benefits of the foundation shall not be available to those whose active service ceased before April 16, 1905, the date of Mr. Carnegie's original letter to the trustees.

RULE VII

In counting years of service toward a retiring allowance it is not necessary that the entire service shall have been given in institutions upon

the accepted list of the foundation, but only years of service in an institution of higher education will be accepted as an equivalent.

RULE VIII

In no case shall any allowance be paid to a teacher who continues to give the whole or a part of his time to the work of teaching as a member of the instructing staff of any institution.

RULE IX

The Carnegie Foundation for the Advancement of Teaching retains the power to alter these rules in such manner as experience may indicate as desirable for the benefit of the whole body of teachers.

SCIENTIFIC NOTES AND NEWS

READERS of SCIENCE will have learned with regret of the circumstances leading to the retirement of Mr. Gifford Pinchot from the direction of the Forest Service.

DR. C. F. CHANDLER, since 1864 professor of chemistry in Columbia University, will retire from active service at the close of the present academic year. The trustees have passed a resolution expressing their high appreciation of his services to the university.

PROFESSOR THEODORE W. RICHARDS, of Harvard University, has been reappointed research associate of the Carnegie Institution of Washington, having received a new grant of \$2,500 for the continuation of his researches on atomic weights and other physico-chemical constants.

PROFESSOR G. P. BAXTER has also been reappointed a research associate of the institution and a grant of \$1,000 has been made to him for the continuation of investigations upon atomic weights.

PROFESSOR E. J. WILCZYNSKI, of the University of Illinois, has been awarded a prize of eight hundred francs by the Royal Academy of Science, Letters and Fine Arts of Belgium, for his memoir on "The General Theory of Congruences." This prize was announced some time ago by the academy for the most noteworthy development of some phase of the application of differential geometry to ruled space.

DR. F. W. PUTNAM, emeritus professor of American archeology and ethnology at Harvard University, has been appointed honorary academician of the Museum of the National University of La Plata in the section of the natural sciences.

PROFESSOR KARL RUNGE, of the University of Göttingen, Kaiser Wilhelm professor at Columbia University, and Professor Otto Jespersen, visiting professor from the University of Copenhagen, have been given the degrees of D.Sc. and D.Litt., respectively, by Columbia University.

IN recognition of the services rendered by him in the reform of medical education in Hungary, and of the active interest taken by him in the International Medical Congress held last year at Budapest, the medical faculty of the university of that city has conferred on Count Albert Apponyi, the minister of education, the honorary degree of doctor of medicine.

MR. JOHN A. VOGELSON has been appointed chief of the Philadelphia Bureau of Health in succession to Dr. A. C. Abbott, who resigned some months ago.

MR. C. H. T. TOWNSEND has been given leave of absence by the Department of Agriculture for eighteen months to inaugurate an entomological service for the Peruvian government.

THE American Nature-study Society has elected Professor O. W. Caldwell, of the University of Chicago, president of the society, and Professor F. L. Charles, of the University of Illinois, secretary and editor of *The Nature-study Review*. The office of that journal will be removed from New York City to Urbana, Ill.

DR. AUSTIN M. PATTERSON was elected editor and M. John J. Miller associate editor, of *Chemical Abstracts* at the Boston meeting of the American Chemical Society, Professor W. A. Noyes, of the University of Illinois retiring. The office of this publication was removed last August from Illinois to Ohio State University, where it has since been in charge of Dr. Patterson as associate editor.

DR. WILLIS L. MOORE, chief of the Weather Bureau, delivered a lecture on December 27 in the assembly room of the Automobile Club of America, New York City, on "The Work of the Weather Bureau in Relation to Aeronaautics."

DR. E. L. THORNDIKE, professor of educational psychology in Teachers College, Columbia University, gave on January 11 an address before the Middletown Scientific Association on "Experimental Studies in Animal Intelligence."

SIR ERNEST SHACKLETON lectured in Rome on his Antarctic expedition on January 3. Among those present were the king and queen.

DR. G. BOWDLER SHARPE, assistant keeper in the department of zoology of the British Natural History Museum, and eminent as an ornithologist, died on December 25, at the age of sixty-two years.

PROFESSOR H. H. GIGLIONE, director of the Royal Museum of Natural History and professor of zoology at Florence, known as an ethnologist as well as a zoologist, died on December 20, at the age of sixty-six years.

DR. EDOUARD BRISSAUD, professor in the Paris School of Medicine and well known for his work in pathological anatomy and medicine, has died at the age of fifty-two years.

A BILL has been introduced into the house of representatives making the present Bureau of Education a Department of Education with a secretary in the Cabinet.

THE offices of the Bureau of American Ethnology were on January 1, 1910, transferred from the Adams Building on F Street to quarters in the Smithsonian building. Mr. F. W. Hodge on that date assumed charge of the bureau with the title of ethnologist-in-charge.

THE path of Halley's comet has been added to the planetarium in the Foyer of the American Museum of Natural History, and its position in the solar system will be indicated daily during the next few months, while the comet is visible to the unaided eye.

THE New York Aquarium had a greater number of visitors during the year 1909 than

ever before, the attendance being 3,803,501, an average of 10,417 a day. These figures show that the aquarium has a greater patronage by the public than all the other museums of the city, including the Zoological Park, combined. These figures are unequalled by those of any other museum in the world of which statistics are available.

THE Geological Survey's report on the production of copper in 1908, prepared by B. S. Butler, is now ready for distribution. The mine production, smelter output and refinery production in 1908 exceeded those of 1907. The production in 1908 by smelters from copper-bearing material mined in the United States was 942,570,721 pounds, the largest in the history of the industry. The production in 1906, the next largest, was 917,805,682 pounds; that for 1907 was 868,996,491 pounds. The world's production of copper in 1908 was 1,667,098,000 pounds, so that the United States contributed considerably more than half the total product of the metal. The exports of refined copper were 618,613,842 pounds, the largest amount recorded; the imports were 218,705,487 pounds, mostly from Mexico, Canada and Peru. The domestic consumption of new copper in 1908 was 480,000,000 pounds; of old copper 23,000,000 pounds, making the total domestic consumption 503,000,000 pounds, against 547,000,000 pounds in 1907. The stock on hand January 1, 1908, was 125,745,796 pounds; on January 1, 1909, it was 121,876,759 pounds. The average quoted price of electrolytic copper at New York in 1908 was 13.2 cents a pound. In 1907 the price was 20 cents a pound. The commercial conditions during the year were very stable, the variations in monthly average price covering a range of only 1.54 cents, as compared with 11.90 cents in 1907. A notable feature of the industry was a decrease in cost of production due to improvements in methods and the increased efficiency of labor. Arizona ranks first in the production of copper, Montana, Michigan, Utah, California, Tennessee, Colorado, Nevada, Idaho and New Mexico following in the order named. According to the smelter returns the three leading copper states—Ari-

zona, Montana and Michigan—produced 81 per cent. of the total output in 1908.

THE London *Times* states that the exhibition which is to open in December next at Allahabad will be the largest ever held in India. While essentially non-official in character, the strong executive committee in charge enjoys the support of the local government, which is itself managing the agricultural, forest and educational courts. Sir John Hewett, the present lieutenant-governor, who was lately commercial member in the governor-general's council, and other government officials are giving their aid in every legitimate way. The exhibition committee specially desire machinery and demonstrating processes for the agricultural, engineering and textile courts. As is stated in the preliminary prospectus, "the main object of the exhibition is to encourage the arts and industries of the united provinces by displaying products and methods of production and by introducing from other countries such commodities as are required to supplement indigenous productions." The first aviation meeting in the east will be held in connection with the exhibition.

IN the course of its last session the state legislature of North Dakota provided for the establishment of a biological station on the shore of Devils Lake. The bill places the station under the direction and control of the trustees of the University of North Dakota, and provides that the biological staff of the university shall direct the work of the station. The bill further states that, "It shall be the duty of the staff of said station, as directors thereof, to study the animals and plants in Devils Lake and other portions of North Dakota with reference to the problem of restocking and cultivating fish in Devils Lake and in any other waters of the state, especially those of an alkaline character, such as Devils Lake; to study and make collections of any animals and plants in North Dakota that have commercial and scientific value." The station is housed in a commodious, artistic building of cobble and concrete. The equipment, now being procured, will consist of boats, dredges, seines, pumps and all the

varied apparatus necessary for the study of small animals and plant forms. The laboratories will be equipped, some of them for general students of biology and some for special research. Salt water from the lake and fresh water from other sources will provide for the aquaria and other receptacles. Investigations already made show that Devils Lake swarms with life in great numbers though not in great variety of species. North Dakota has a rare opportunity to study the biological stages of variation, adaptation and isolation, and it is the purpose of this new station to provide for biological students and to offer facilities for trained investigators who may desire to carry on research under such conditions as exist in that region.

THE *Auk* states that the Museum of Comparative Zoology at Harvard University has received during the past year the most noteworthy accessions to its bird collection in its history. These include, as the most important, the E. A. and O. Bangs collection, containing approximately 24,000 skins, chiefly from North and middle America and the West Indies. Most of those from Central America were taken by Mr. Wilmot W. Brown and Mr. C. F. Underwood, well known as intelligent and energetic collectors, the former noted for his skill in preparing skins of birds and mammals. The specimens have been determined by Mr. Outram Bangs, with the assistance of Mr. Ridgway and Dr. Richmond. They also include the types of the many new forms described in recent years by Mr. Bangs. Another gift of unusual importance consists of several thousand specimens from the interior of central and western China, presented by Mr. John E. Thayer. A collection of over 3,000 skins collected in Palestine have been acquired by purchase. A considerable number of other skins and mounted specimens of unusual interest have also been acquired, by gift or purchase, from other sources.

UNIVERSITY AND EDUCATIONAL NEWS

THE late Arthur Hill, regent of the University of Michigan, has bequeathed \$200,000

to the university for the erection of an auditorium.

THE gift of \$650,000 by Mrs. Russell Sage to pay for the Hillhouse property, of Yale University, will release a considerable sum which, according to the correspondent in the N. Y. *Evening Post*, will probably be used for work in biology.

THE building of the University College of Medicine, at Richmond, Va., was destroyed by fire on January 6, entailing a loss estimated at \$200,000.

THE board of trustees of the Massachusetts Agricultural College having received propositions from the Boston & Albany Railroad and also from electric railroads centering in Springfield to run agricultural educational trains over their respective lines, it has been voted, "That this board will heartily cooperate with these railroads, the Board of Agriculture, the Chamber of Commerce and other organizations in the state to further the development and success of this project. To this end it will tender the services of its teachers and experts and place at the disposal of these railroads such equipment and apparatus as may be required."

AT the annual meeting of the governors of the Nottingham University College on December 22 it was announced that it was the intention of the council to develop immediately a scheme for submission to the court of governors that application might be made for a full charter, so that Nottingham College would become a degree-conferring university.

DR. C. J. KEYSER has been appointed head of the department of mathematics of Columbia University, to succeed Professor J. H. Van Amringe, who retires from active service at the close of the academic year.

DR. J. L. SIMONSEN has resigned his position as assistant lecturer and demonstrator in chemistry in Manchester University to accept the chair of chemistry in the University of Madras. Mr. Alfred Holt, M.A., D.Sc., has been appointed as his successor.